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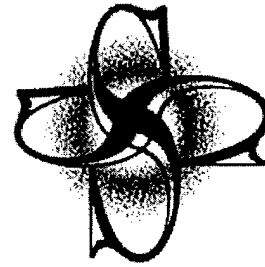
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Computational Models of Human Organization Dynamics

Quarterly Report #8

Period Covered: 12/1/98 – 2/28/99

Reporting Period

This is the eighth quarterly report for the project: Computational Models of Human Organization Dynamics. This report covers the period from 12/1/98 through 2/28/99.

Progress During Reporting Period

During this quarter we have developed the computational primitive, a scheme, that we believe is sufficient to implement action schemata, agents and organizations. We have also developed a critique of our prototype ACCORD technology suite, as a basis for refining its support for Practice Mapping (our data collection protocols) and Planning by Analysis (our problem-solving strategy that integrates organizational modeling with analysis and planning).

The computational primitive has to satisfy the following requirements:
- data management (storage and access)
- event-directed computation
- policy-directed computation (i.e., explicit control structures)
- arbitrary interruption and redirection of ongoing computation
- self-embedding

We have produced a specification of a computational object, which we call a scheme, with these features. Schemes are composed of a top-level controller, an active data space, and a set of computational forms called handlers. The data space manages internal and external access to data. The top-level controller manages the interface of the scheme with other schemes – i.e., it enforces an external protocol with other schemes. It also contains event recognition and agenda management capabilities that are used to recognize when computation is relevant or needs to be redirected; this provides for event-directed and policy-directed control strategies. The top-level controller runs concurrently with any handlers, and so provides for the detection and management of interrupt conditions. Handlers are much like the methods found in object-oriented programs, except that their internal protocol permits them to be full-fledged schemes as well as simple code-body programs.

We have embarked on an extensive critique of our ACCORD prototype, based on the results of the simulated crisis response exercise we developed (with experts) and used as a test scenario. We have decided we should formalize the relationship between data and models more carefully (i.e., as full-fledged arguments, not just links). And, we are beginning to develop a specification of the data structures we need to build down from the existing structures to ones that are more amenable to the nature of actual data. In other words, the structures we have now tend to be those of an organization model in final form, and we need the intermediate structures that are built up from data.

Plans for Next Quarter

We plan to investigate risk management next quarter, in preparation for a careful analysis of the Asymmetric Threat domain.

Equipment Purchases

There were no equipment purchases this quarter.

Personnel Matters

There have been no changes in the key personnel proposed for this project.

Meetings, Important Exchanges and Decisions

In discussion with Larry Willis of DARPA, we have agreed to specialize our work for the domain of asymmetric threat.

Problems

We have no problems to report at this time. We foresee no substantial risks to our ability to complete this project successfully, on time, and on budget.

Fiscal Status

The table below summarizes the fiscal status for this contract and our projected spending over the next quarters.

Amount Currently Provided	$824,647.
Expenditures and Commitments to Date	$714K
Manhours Planned, Actual	Planned = 858 Actual = 709
Estimated Funds/Qtr to Complete Work	$110K
Estimated Date of Completion	5/31/98

Distribution of this Report

The following individuals/organizations comprise the distribution list for quarterly reports on this contract.

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